



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/020,937	12/19/2001	Dong June Kim	MRE-0047	2861

7590 11/07/2002

FLESHNER & KIM, LLP
P.O. Box 221200
Chantilly, VA 20153-1200

EXAMINER

CHIN, PAUL T

ART UNIT PAPER NUMBER

3652

DATE MAILED: 11/07/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/020,937

Applicant(s)

KIM, DONG JUNE

Examiner

PAUL T. CHIN

Art Unit

3652

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 December 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3. 6) ☐ Other: _____

Art Unit: 3652

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

2. The disclosure is objected to because of the following informalities: on page 13 (abstract), line 8, it appears that the words "a parts" should be changed to – a part – or – parts --.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over **the prior art, figure 1**, provided by the applicant.

The prior art in Figure 1 shows a part suction head comprising a motor (10) having a rotational axis; a ball spline unit (20) for rotation movement and vertical reciprocation; a rotation shaft unit (30) moved in a vertical direction and rotated; and *a coupling means* for transmitting the rotary force of the motor to the ball spline unit.

However, the prior art does not show *a second coupling means* for transmitting the rotary force of the ball spline unit to the rotation shaft unit.

Art Unit: 3652

Re claims 1 and 2, accordingly, it would have been an obvious design choice to provide *a second coupling means, which is similar to the first coupling means*, on the prior art to transmit the rotary force of the ball spline unit to the rotation shaft unit. It is pointed out that the first coupling means, having inner diameter holes at each end with a certain depth, is applied to connect the two shafts. Similarly, it would have been an obvious design choice to provide a second coupling means, having inner diameter holes at each end with a certain depth, on the prior art to connect another different shafts, the ball spline to the rotation shaft.

Re claims 3 and 4, the prior art shows *a first coupling* (10) (page 3, lines 19-25) which appears to maintain a predetermined distance between the motor shaft and the ball spline nut. Similarly, it would have been an obvious design choice to provide *a second coupling means* to maintain a predetermined distance between the ball spline to the rotation shaft.

5. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over **the Japanese Publication [JP 2000,091,360]** in view of **Lee et al. [4,703,965]** or **Kirby et al. [5,308,132]**.

The Japanese Publication [JP 2000,091,360] shows a part suction head comprising a motor (11) (see Fig. 2) having a rotational axis; a ball spline unit (21) for rotation movement and vertical reciprocation; a rotation shaft unit (16) moved in a vertical direction and rotated; and *a coupling means* (12) for transmitting the rotary force of the motor to the ball spline unit.

The Japanese Publication [JP 2000,091,360] does not show *a second coupling means* for transmitting the rotary force of the ball spline unit to the rotation shaft unit.

However, **Lee et al. [4,703,965]** shows *a coupling means* (62) to transmit the rotary forces between the upper shaft (60) (Fig. 2) and the lower shaft (72) (Fig. 3). **Kirby et al.**

Art Unit: 3652

[5,308,132] also shows *a coupling means* (228) to transmit the rotary forces between the upper shaft (203) (see Fig. 2) and the lower shaft (208) having different outer diameters.

Re claims 1 and 2, accordingly, it would have been obvious to provide *a second coupling means*, on the Japanese Publication [JP 2000,091,360] as taught by Lee et al. [4,703,965] or Kirby et al. [5,308,132] to transmit the rotary force of the ball spline unit to the rotation shaft unit.

Re claim 4, it would have been obvious to provide *a second coupling means by using set screws (64,64)* on the Japanese Publication [JP 2000,091,360] as taught by Lee et al. [4,703,965] to maintain a predetermined distance between the shafts. Similarly, it would have been obvious to provide *a second coupling means* on the Japanese Publication [JP 2000,091,360] as taught by Kirby to maintain a predetermined distance between the shafts.

6. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over **the Japanese Publication [JP 2000,091,360]** in view of **Lee et al. [4,703,965]** or **Kirby et al. [5,308,132]**, as applied to claim 1 above, and further in view of **Hwang [6,308,403]**.

The Japanese Publication [JP 2000,091,360] in view of Lee et al. [4,703,965] or Kirby et al. [5,308,132], as presented in section 5 above, does not show *a bearing* to be provided to the ball spline nut to restrict the rotation radius of the rotation shaft.

However, **Hwang [6,308,403]** discloses *a bearing* to be provided to the ball spline nut to restrict the rotation radius of the rotation shaft.

Art Unit: 3652

Accordingly, it would have been obvious to provide *a bearing or bearings* (91-93) (see Fig. 9) on the ball spline nut of the modified Japanese Publication [JP 2000,091,360] as taught by Hwang [6,308,403] to restrict the rotation radius of the rotation shaft.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Asai et al. [6,012,222] discloses an electronic mounting head to contact an electronic component.

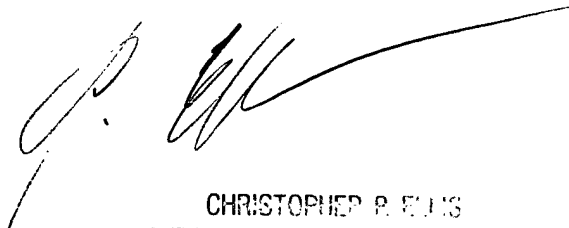
Any inquiry concerning this communication or earlier communications from the examiner should be directed to PAUL T. CHIN whose telephone number is (703) 305-1524. The examiner can normally be reached on MON-THURS (7:30 -6:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, EILEEN LILLIS can be reached on (703) 308-3248. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9326 for regular communications and (703) 872-9327 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-4177.

ptc

PTC
November 3, 2002



CHRISTOPHER P. ELLIS
SUPERVISORY EXAMINER
TECHNOLOGY CENTER 2000